AD-A077 038 ARMY COMMAND AND GENERAL STAFF COLL FORT LEAVENWORTH KS F/G 5/9
THE PERSONNEL MANAGEMENT MODEL.(U)
JUN 79 R E JONAS

UNCLASSIFIED NL

1 OF 1
AD-
A077038

END
DATE
FILMED
12-79
DDC

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO. 3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) The Personnel Management Model	5. TYPE OF REPORT & PERIOD COVERED Final Report 8 June 79
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Jonas, Richard E. / MAJ, USAF	8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Student at the U.S. Army Command and General Staff College, Fort Leavenworth, Kansas 66027	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 61
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. Army Command and General Staff College ATTN: ATSW-SE	12. REPORT DATE 8 June 79
	13. NUMBER OF PAGES 38
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)	15. SECURITY CLASS. (of this report) Unclassified
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

AD A077038

DDC RECEIVED NOV 21 1979 A

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

Approved for public release; distribution unlimited.

18. SUPPLEMENTARY NOTES

Master of Military Art and Science (MMAS) thesis prepared at CGSC in partial fulfillment of the Masters Program requirements, U.S. Army Command and General Staff College, Fort Leavenworth, Kansas 66027

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Models
Mathematical Models
Computer Models
Personnel
Personnel Management
Personnel Readiness
Personnel Turnover

DDC FILE COPY

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

In the field of military personnel management, there is a need for an improved computerized model as a method of controlling personnel turnover. Such a model should provide the following:

(1) Display gain/loss data and a monthly accounting of manning;

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE
40 - 3681

037 260

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

(2) Show worst case projected manning levels;

(3) Describe turnover in meaningful terms; and, most importantly,

(4) Predict the impact of personnel turnover on combat readiness.

In civilian enterprises, the personnel management community takes cognizance of many turnover considerations: morale, stability, cost, and organizational effectiveness, to name a few. However, little work appears to have been done in constructing and computerizing predictive mathematical models capable of presenting a clear picture of turnover and its effect.

The military services, on the other hand, have studied the use of models for some time now. They have made some progress toward a model which meets the criteria specified above, although much remains to be improved in today's models. The Air Force has made significant progress in this regard.

This thesis articulares the necessity of turnover control, reviews what personnel managers have done up to now in computerized manning and turnover models, and proposes a Personnel Management Model which provides the features discussed above.

The Personnel Management Model

Richard E. Jonas, Major, USAF
U.S. Army Command and General Staff College
Fort Leavenworth, Kansas 66027

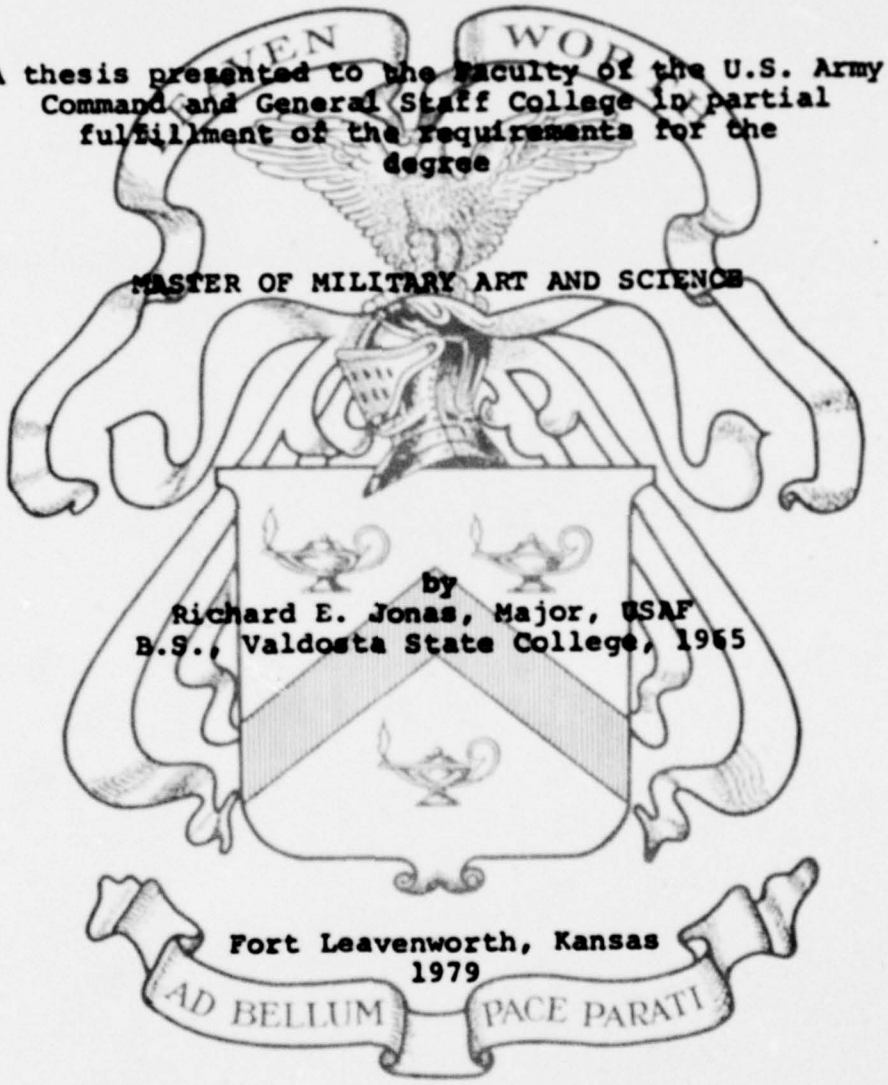
Final Report 8 June 1979

A Master of Military Art and Science thesis presented to the faculty of the U.S. Army Command and General Staff College, Fort Leavenworth, Kansas 66027

THE PERSONNEL MANAGEMENT MODEL

A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE



by
Richard E. Jonas, Major, USAF
B.S., Valdosta State College, 1965

Fort Leavenworth, Kansas
1979

MASTER OF MILITARY ART AND SCIENCE

THESIS APPROVAL PAGE

Name of candidate: Richard E. Jonas

Title of thesis: The Personnel Management Model

Approved by:

James C. Johnson, Research Advisor

Nathan S. Goodberg, Member, Graduate Faculty

Dr. Bradley R. Lear LTC, Member, Consulting Faculty

Accepted this 5th day of June, 1979, by Philip J. Brookes, Director, Master of Military Art and Science.

The opinions and conclusions expressed herein are those of the individual student author and do not necessarily represent the views of either the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

THE PERSONNEL MANAGEMENT MODEL, by Major Richard E. Jonas, USAF, 39 pages.

In the field of military personnel management, there is a need for an improved computerized model as a method of controlling personnel turnover. Such a model should provide the following:

(1) Display gain/loss data and a monthly accounting of manning;

(2) Show worst case projected manning levels;

(3) Describe turnover in meaningful terms; and, most importantly,

(4) Predict the impact of personnel turnover on combat readiness.

In civilian enterprises, the personnel management community takes cognizance of many turnover considerations: morale, stability, cost, and organizational effectiveness, to name a few. However, little work appears to have been done in constructing and computerizing predictive mathematical models capable of presenting a clear picture of turnover and its effect.

The military services, on the other hand, have studied the use of models for some time now. They have made some progress toward a model which meets the criteria specified above, although much remains to be improved in today's models. The Air Force has made significant progress in this regard.

This thesis articulates the necessity of turnover control, reviews what personnel managers have done up to now in computerized manning and turnover models, and proposes a Personnel Management Model which provides the features discussed above.

TABLE OF CONTENTS

LIST OF FIGURES

DEFINITIONS

AFB Air Force Base.

AFMPC Air Force Manpower and Personnel Center located at Randolph AFB, Texas.

AFSC Air Force Specialty Code is an alphanumeric code signifying the duty one performs.

AIRS Airman Information Retrieval System is a computerized manning model used in managing Air Force enlisted personnel.

Alphanumeric A string of letters and numbers representing codes used in data processing; an example would be the AFSC for "F-4 Instructor Pilot" which is "K1115F."

APDS Advanced Personnel Data System; the computer-based management information system used by the Air Force personnel system.

Assigned In the Air Force personnel context, this term signifies the number of people belonging to an operating unit.

Authorized In the Air Force personnel context, this term signifies the number of people required by a unit to perform its mission; it is the number of slots a unit is entitled to fill with people.

CBPO Consolidated Base Personnel Office is where the base's personnel people do their work. In APDS, each CBPO is coded with a two-digit alphanumeric signifying what base it serves.

CML Combat Manning Level is a term peculiar to the Personnel Management Model set forth in this thesis. It refers to the number of people required by and authorized to a unit specifically for employment in its combat role. CML may or may not equal UDL.

CONUS Continental United States.

CRT Cathode Ray Tube; in this thesis, a CRT is a computer terminal.

C-Status A system of military codes signifying the state of combat readiness of an operating unit. C-1 is the highest state of readiness, followed by C-2, C-3, and C-4; C-4 is the lowest rating.

DAS Date of Arrival on Station; an item coded in APDS signifying the effective date upon which an individual assumed duty at his present station.

DDC Defense Documentation Center.

DOS Date of Separation; this is the date coded in APDS upon which one is scheduled to be discharged or retired from active military service.

EOM End-of-month.

FORSTAT Force Status and Identity Report is submitted periodically by units of all the military services. It informs the chain of command of each unit's C-Status.

Game In this thesis, this term pertains to the capability of a computerized manning model to accept fictitious (or "what if") numbers, operate upon them mathematically in accordance with its parameters, and display the results.

JCS The Joint Chiefs of Staff; the highest echelon of uniformed military authority in the Department of Defense.

MAC Military Airlift Command is the Air Force's Major Air Command responsible for airlift operations.

MAJCOM Major Air Command is the next lower echelon of Air Force hierarchy below HQ/USAF.

Manning Verb: Assigning people to authorized slots.
Noun: The numbers quantifying a unit's personnel status as a result of the foregoing action.

MFEL Manpower Force Element List is that subset of the Unit Type Code which specifies the personnel required for a unit to deploy and conduct combat operations.

MIS Management Information System; may be computer-based.

Model In this thesis, this term refers to a computer-produced document used in personnel management decision-making.

MTOE Modified Table of Organization and Equipment is a U.S. Army document which tailors personnel and equipment requirements to a specific unit and its mission.

MUG Manning Unit Group; in APDS, MUG specifies the wing echelon of organization.

PAS Personnel Accounting Symbol; an APDS code specifying the next level of organization below MUG.

PDD Projected Departure Date; date coded in APDS upon which one is scheduled to depart his present permanent duty station for his next permanent duty station.

PMM The Personnel Management Model is proposed and described in this thesis as an improved method of controlling turnover.

RM Resource Manager is an individual whose duty is to assign people into and out of USAF units.

RNLTD Report Not Later Than Date is the date upon or prior to which one is to report to his next permanent duty station.

RPI Rated Position Identifier is a code signifying aeronautical rating and echelon of flying duty for Air Force officers.

SEI Special Experience Identifier is a subset of AFSC which further differentiates specialty qualification.

SOA Separate Operating Agency is at the same organizational echelon as MAJCOM. Examples are the Air Force Accounting and Finance Center and the Air Force Academy.

TAC Tactical Air Command is the MAJCOM primarily responsible for CONUS fighter operations and training.

TOE Table of Organization and Equipment is a U.S. Army document specifying personnel and equipment requirements for a given class of operating units.

TOS Time on Station is measured from DAS.

UDL Unit Detail Listing; specifies the number of slots by specialty authorized to a unit for peacetime day-to-day operations. Personnel funding and assignment actions are based on this document.

USAF The United States Air Force.

USN The United States Navy.

UTC Unit Type Code; a force packaging document defining personnel and equipment requirements for deployment and employment.

Worst Case Manning The lowest number of people projected to be assigned in a given month. It is computed by subtracting gains from the EOM number.

WSMM Weapon System Management Model is a computerized manning document used in managing Air Force aircrews.

CHAPTER 1

INTRODUCTION

Concept

Controlling the flow of people into and out of operating units is one very important aspect of personnel management in the U.S. Air Force (USAF). This flow is called personnel turbulence, or turnover. Personnel managers use computerized manning models to assist their management efforts. The models are produced by the Advanced Personnel Data System (APDS), USAF's computer-based personnel management information system (MIS).

Problem Statement

The models in use now show the number of projected gains and losses and an end-of-month (EOM) accounting of number of people authorized and assigned. Additional needs are data showing the worst case manning level in each projected month, time-on-station (TOS) figures, tour length trend information, and turnover rate. The most critical need is for a method of depicting the impact of these factors upon the unit's combat capability.

Purpose

This thesis will develop a new model which will meet these additional needs.

Assumptions

Four assumptions are pertinent. First, like the present models, the proposed model will be produced by APDS. Second, the APDS data base will continue to contain the elements essential to the model. Third, the model will be functional in the combat environment. The fourth assumption has to do with manpower requirements. In USAF personnel management two manning standards are applicable: the Unit Detail Listing (UDL), and the Combat Manning Level (CML). These are similar in structure to the Table of Organization and Equipment (TOE) and Modified Table of Organization and Equipment (MTOE), respectively, employed by the U.S. Army. The UDL and CML are assumed to be valid.

CHAPTER 2

SURVEY OF LITERATURE

This author researched both civilian and military documents and publications to determine how and upon what basis non-USAF personnel managers address the problem of personnel turnover. In the civilian personnel community the dominant concerns appear to be the measurement and quantification of turnover rates, and assessment of turnover impact in terms of cost and organizational stability. In large civilian enterprises, as well as the U.S. military services, the quantitative approach is a valid aspect of personnel management. It is necessary to know the answers to "How many; what kind; when?" Frank V. Wagner, in a Datamation article, quotes the British physicist, Lord Kelvin, as saying,

> "When you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely, in your thoughts, advanced to the stage of science."(1)

Dale Yoder asserts that in personnel reports circulated periodically to senior managers in a firm, "the most common item is the number of employees."(2) He says further that accessions and separations may be included along with various measures of turnover rates. Yoder offers a sample format in topical outline form for a periodic personnel report. While

the format is not a mathematical model, it does provide for entry of numbers of people employed at the beginning or end of the period. These may be further broken down by department, sex, et cetera. In his book on personnel management, Michael J. Jucius emphasizes the importance of projecting and preparing for manning vacancies.(3) He discusses turnover rates and calculations, the use of graphics to portray projected vacancies, and he offers an example tabular display or a five-year executive replacement plan.

Jucius suggests two turnover calculations, one based on accessions and the other on separations:

> "...If a company had an average payroll during a given month of 600 (585 at the beginning, plus 615 at the end, divided by 2), took on 50 employees, and 20 were separated from the payroll, then:
> 1. Based upon accession figures, turnover is calculated as follows:
>
> $$\frac{50}{600} \times 100 = 8.33 \text{ per cent}$$
>
> 2. Based upon separation figures, turnover is calculated as follows:
>
> $$\frac{20}{600} \times 100 = 3.33 \text{ per cent.}"$$

The first calculation would be of particular significance to an expanding operation since it provides some measure of the increased personnel training load inherent in increased production. The second calculation may have greater significance when a firm is drawing down its work force.

Edwin B. Flippo calculates turnover rates in the same manner as Jucius, except he further defines a replacement rate, which is the lesser of the accession or separation rate. His rationale is that replacement depends on both an accession

and a separation.(4) Yoder refers to this as the "net labor turnover rate."(5)

The civilian personnel community defines the size of the work force for a given month as being the average strength for the month, i.e., beginning strength plus end strength divided by two. By contrast, the manning models currently produced by USAF's APDS use EOM strength as force size. The model proposed in this thesis will offer still another definition, worst case, which is the smallest number anticipated in the month.

The civilian community is concerned about the impacts of turnover. Yoder (5) views turnover as one indicator of labor unrest. This parallels USAF experience with higher turnover rates at installations of lesser desirability, such as the "northern tier" bases in the Continental United States (CONUS) and many of the oversea remote locations. The USAF accommodates the human factor here through the establishment of shorter tour lengths by regulation for oversea bases of lesser desirability.

Jucius (3) asserts that planning for turnover enhances organizational stability and helps mitigate employee morale problems. Flippo (4) agrees, as does the USAF. The impact of turnover on personnel training requirements is recognized by both Jucius and Flippo. USAF experience has also shown a direct correlation between turnover and training requirements. The impact of turnover on training is magnified in the civilian world by the resulting effect on production, and in the military

by the effect on morale, retention, and combat capability, or C-Status.

One of the more sensitive turnover impacts relates to the financial factor. Flippo (4) underscores the undesirability of excessive turnover by listing several of the costs involved:

> "1. Hiring costs, involving time and facilities for recruitment, interviewing, and examining a replacement.
> 2. Training costs, involving the time of the supervisor, personnel department, and trainee.
> 3. The pay of a learner is in excess of what he produces.
> 4. Accident rates of new employees are often higher.
> 5. Loss of production in the interval between separation of the old employee and the replacement by the new.
> 6. Production equipment is not being fully utilized during the hiring interval and the training period.
> 7. Scrap and waste rates climb when new employees are involved.
> 8. Overtime pay may result from an excessive number of separations, causing trouble in meeting contract delivery dates."

With some minor modifications in wording, the foregoing could be transposed readily to the military situation.

Flippo asserts his belief in a systematic attack upon the management manpower planning problem. The Advanced Personnel Data System has taken the Air Force a long way down the road toward the goal of effective and efficient personnel management. However, the turnover problem remains a serious obstacle.

Research of military sources of information included an extensive review of documents available through the Defense Documentation Center (DDC). The effort was directed at

locating work done by military agencies in the development or use of mathematical models in personnel management.

In 1971, the Rand Corporation published a study which had been done for USAF on the analysis of personnel movement in large systems.(6) The study developed a generalized model whose purpose was to describe personnel movement from category to category (geographically, for example). The model has the capability of high specificity in defining its categories. For example, it could describe movement of USAF pilots up the promotional ladder; or, in a more general application, the model could describe the movement of all USAF officers among their various specialties.

The U.S. Navy (USN) has studied the application of computer-based models in managing the rotation of Naval personnel between sea and shore duty. While their objective was to resolve several rotational problems, the primary thrust of their effort was toward a more efficient tour length policy for the two types of duty. They dealt with the management of enlisted rotation, although there appears to be no reason why the concepts developed would not apply also to officer personnel management. In a 1970 study by the Naval Personnel and Training Research Laboratory, it is stated that with the use of a model,

> "the rotation system could be monitored in terms of the average number of personnel movements made over time, the relationship between prescribed tour lengths and actual tour lengths, and the ratio maintained between sea duty and shore duty."(7)

The rotation model developed in this study provides the

capability of testing and evaluating proposed policy prior to formalization and implementation. Such a feature is essential to an effective computer-based personnel management model. The importance of this is underscored by the following statement from the study:

> "In order to get an accurate picture of the dynamic nature of the present rotation system, a measure of the 'true' or actual tour lengths as well as prescribed tour lengths must be included in the model."(7)

This model describes the current manning situation for both sea and shore duty in terms of allowances (authorizations), onboard strength, and a computed manning percentage. The model further displays the ratios between current sea and shore allowances and between current sea and shore strengths. "Based on the given manning levels at sea and ashore, a prescribed tour length for shore duty, and estimates of the rotatable sea population, the model computes a tour length for sea duty."(7) This model is similar to the proposed APDS model presented in this thesis in that tour length data is produced. The proposed APDS model, however, projects a tour length trend for succeeding future months based on projected personnel gain/loss data. The Navy model does not.

Richard W. Butterworth of the Naval Postgraduate School in Monterey, California, addressed the problem of a policy planning model for determining sea and shore duty tour lengths in a 1973 study for the Navy Personnel Research and Development Center.(8) He found that the flow of personnel between sea and shore duty is governed by the following ratios:

$$\frac{\text{sea duty strength}}{\text{sea tour length}} = \frac{\text{shore duty strength}}{\text{shore tour length}}$$

The author of this thesis arrived independently at the same concept in the course of developing the proposed APDS model. In studying the flow of Air Force personnel between CONUS and oversea duty, it was found that

$$\frac{\text{CONUS force size}}{\text{CONUS tour length}} = \frac{\text{oversea force size}}{\text{oversea tour length}}$$

This points up the similarities in personnel management problems and approaches thereto between the two services.

The Navy's efforts in computerizing models of the rotation system culminated in the publication in 1973 of a guide to the "use of the computerized version of the Equilibrium Flow Model as a tool in the management of enlisted personnel."(9)

The U.S. Army is concerned about the effect of personnel turnover on combat readiness. In their Force Status and Identity (FORSTAT) reports they report not only operating strength, but turnover as well. The turnover percentage is computed by dividing "the number of personnel reassigned or discharged from the reporting unit during the preceding three months by the operating strength"(10) and converting to a percentage. Air Force FORSTAT reporting includes no such procedure. The APDS model proposed in this thesis has a similar purpose to the Army FORSTAT procedure, but it differs in that no percentage is computed. This model portrays the turnover impact via a table and a line graph of actual numbers, and projects future data. The Army procedure makes no projections.

As mentioned earlier, personnel turnover in the Air Force is managed using computerized manning models. In the next chapter, some examples of these models will be discussed.

CHAPTER 3

CURRENT USAF MODELS

This chapter addresses four subtopics: (1) The USAF personnel resource manager (RM); (2) A brief orientation to APDS; (3) The Airman Information Retrieval System (AIRS); and, (4) The Weapon System Management Model (WSMM).

The Resource Manager

In USAF personnel management parlance, the activities involved in controlling the flow of people among operating units are referred to as personnel resource management. At Air Staff (HQ/USAF) and Major Air Command (MAJCOM) level, one who assigns people from one unit or base to some other unit or base is called a resource manager. The RM (or personnel manager as he is sometimes called) monitors the manning levels in those units and specialties under his purview and assigns/reassigns people to and from those units such that he complies with manning guidance for those units. He is informed of the manning situation by computerized models produced as output by the computerized Advanced Personnel Data System. The assignment actions resulting from his management decisions are implemented via APDS. His actions directly influence unit personnel combat readiness. He can drive C-Status down by undermanning, which leaves the unit without enough people to perform the mission, or by

over-manning, which burdens the unit with excessive administrative loads and morale problems; or by turning over unit personnel too fast, which drives the unit to an excessive training load. His most important task is to help maintain combat readiness at C-1 in his units. This is true not only because the effects of his work are reviewed by every commander in the chain of command up to and including the Joint Chiefs of Staff (JCS), but also because success in battle depends upon it.

His most difficult task is controlling turnover. Turnover presents somewhat of a dilemma. In any unit, a careful orchestration of personnel turnover is required to insure that things go smoothly. The turnover rate has both an upper and a lower threshold of desirability. Zero turnover is unachievable; people die, retire, and quit. The regulated length of oversea tours of duty further constrains turnover at somewhat above zero. Even if it were achievable, zero turnover would be undesirable for many reasons. It would severely restrict the opportunity of upward mobility, frustrating the aspirations of bright and promising younger people. Zero turnover would restrict the cross-flow of new and innovative ideas that take place with changing group membership. Turnover that is too low inbreeds nonproductive, stereotyped philosophies and procedures. Managed turnover, therefore, enhances viability and productivity.

At the other end of the spectrum, too rapid turnover degrades mission effectiveness. Some degree of continuity is

essential to an orderly operation. People must have enough time to become acquainted with each other and the job at hand to be effective. Since turnover rate drives the tour length trend, high turnover can cost money, de-stabilize organizations, and adversely affect morale.

The RM must be able to analyze and assess the manning situation in a unit; make a decision; act; then receive immediate feedback on the effect of this sequence of events. His key to success is more highly refined support from APDS.

The Advanced Personnel Data System

APDS is USAF's personnel MIS. The prime manager is the Air Force Manpower and Personnel Center (AFMPC) at Randolph AFB, Texas. The hardware includes the Burroughs 6700 at Randolph (Air Staff level), the Honeywell 6000 at MAJCOM, and the Burroughs 3500 at base-level. MAJCOM's are also tied into the Burroughs 6700 via remote terminal Cathode Ray Tubes (CRT). APDS software produces the manning models used by the personnel resource managers at Air Staff and MAJCOM. Although APDS contains many data files, this thesis is concerned primarily with two: The Airman Master File and the Officer Master File. The first provides data on enlisted people; the second deals with commissioned officers and warrant officers.

Airman Information Retrieval System

AIRS is an enlisted manning document produced by APDS and built from the Airman Master File. An example of AIRS

is presented in Figure 1.(11) The example in the figure displays the current and projected manning situation for one specialty in a USAF fighter wing. An explanation of the pertinent data items follows.

ⓐ Two-digit alphanumeric defining Major Air Command.

ⓑ Five-digit alphanumeric Air Force Specialty Code (AFSC) identifying the specialty.

ⓒ SEI - Special Experience Identifier; SEI is a subset of AFSC. None is specified here.

ⓓ CBPO - Consolidated Base Personnel Office; two-digit alpha identifying Air Force Base where the unit is located.

ⓔ MUG - Manning Unit Group; single-digit alphanumeric identifying the wing.

ⓕ PAS - Personnel Accounting Symbol; four-digit alphanumeric identifying wing subordinate unit(s). None is specified in the example; therefore, the tabulated data pertains to the entire wing.

ⓖ Date when model was last updated; indicates currency of data presented. Normally, AIRS is updated weekly.

ⓗ Grade - this heads the column which displays enlisted grade. For example, "9" means "E-9" or Chief Master Sergeant.

ⓘ "SK" means "Skill Level." Air Force enlisted skill levels are 3-5-7-9, with 9 being the highest. Note that there are three grades per skill (except for the entry level "3"), with a subtotal by skill level in the tabulated figures.

ⓙ "Current" heads the two columns labeled "Auth" and "Asgd." These columns display the manning situation for the end of the current month, projected as of the date specified at ⓖ. "Auth" is the number of slots authorized for this unit and specialty; "Asgd" is the number of people actually assigned. Note the percentage column labeled "PCT."

ⓚ "GAN" means gains and shows the number of people scheduled to be assigned into the unit over the next three months.

(l) "LOS" means "losses" and shows the number of people scheduled to depart the unit over the next three months.

(m) This column shows projected gains for the 4th through 7th future months;

(n) shows losses for that time period.

(o) "DOS" - Date of Separation; specifies the number of people who are separating from the Air Force.

(q) These two columns tabulate the manning situation projected for the end of the seventh month, similar to the current month projection in column (j).

(r) and (s) show projected gains and losses for the 8th through 10th future months, (t) shows separations for 7th through 11th months, and (u) gives the manning projections for the end of the 10th month.

(v) This line totals the 7 + 5 + 3 skill level manning, while

(w) adds in the nine-level manning for the overall picture.

Weapon System Management Model

WSMM is an aircrew manning document produced by APDS and built from the Officer Master File. An example is given at Figure 2.(11) The figure displays the current and projected manning situation for pilots in a USAF fighter wing. An explanation of the pertinent data items follows:

(a) WSMM Profile - title of the display.

(b) ACTUAL - signifies that the data in the display reflects actual data drawn from the master file. WSMM allows the RM to game certain values in the display. When the RM does so, this data item reads "GAMED."

(c) This item reflects the currency of the data in the table. WSMM is normally updated weekly.

(d) Three pieces of information are specified here: type aircraft (crew specialty), Major Air Command, and CBPO (base).

(e) In this line, column headings are displayed; coding is YYMM (year-month). The model paginates to display up to 12 months of data (current month plus 11).

ⓕ This line displays the manpower authorization to this unit for this crew position. The example shows 104 pilots authorized to this wing.

ⓖ In this line is displayed the EOM accounting of number of people assigned.

ⓗ and ⓘ display gain/loss data in each month.

ⓙ This line displays the number of Majors (grade O-4) and Lieutenant Colonels (O-5) assigned. It provides some measure of the supervision available to the unit.

ⓚ "Net Manning" simply shows the difference in "Authorized" (Composite) and "Assigned"; it shows manning deficits/ surpluses.

ⓛ and ⓜ differentiate between and within line and staff crew manning, respectively.

ⓛ gives an accounting of both flying and non-flying staff crew manning.

ⓜ gives an accounting of total line crew manning, with a breakout among experienced and inexperienced crewmembers, and those who are on their first assignment after undergraduate flying training.

AIRS and WSMM are two examples of computerized manning models in use by Air Force personnel managers today. A proposed new model is presented in the next chapter.

FIGURE 1

EXAMPLE OF AIRS

```
 OT *  1 N *462XO* SEI:*** SSIR:* CBPO:MY MUG:O PAS:**** DLOC:****  DT:78 DEC 29
 G  S CURRENT          GAN LOS GAN LOS DOS 7TH MONTH       GAN LOS DOS 10TH MONTH
 R  K AUTH ASGD PCT    1-3 1-3 4-7 4-7 1-6 AUTH ASGD PCT   810 810 711 AUTH ASGD PCT
 9  9    2    2        0   0   0   1   0    2    1        0   0   0    2    1
 8  9    0    1        0   0   0   0   0    0    1        0   0   0    0    1
 7  9    2    3        0   0   0   0   0    2    3        0   1   0    2    2
TOT9L    4    6 150%                       4    5 125%                  4    4 100%
 7  7   13    6        1   0   0   0   0   13    8        0   0   0   13    8
 6  7   18   15        1   1   0   2   0   24   12        0   0   0   30   12
 5  7   11   18        0   1   0   1   0   11   16        0   0   0   11   16
TOT7L   42   39  93%                      48   36  75%                 54   36  67%
 5  5   33   10        0   1   0   3   0   33    6        0   0   0   37    6
 4  5   52   57        0   7   1   9   0   52   42        0   2   2   55   40
 3  5   12  102        1   1   0   7   0   12   95        0   0   1   13   95
TOT5L   97  169 174%                      97  143 147%                105  141 134%
 3  3   57   84        0   0   0   0   0   57   84        0   0   0   63   84
E3TOT   69  186 270%                      69  179 259%                76  179 236%
7/5/3  196  292 149%                     202  263 130%               222  261 118%
TOTAL  200  298 149%                     206  268 130%               226  265 117%
 SEL=4620*******0TMY0****1****NTA  RCDS READ 1505 ** TIME 002 SEC
 ENTER NEXT REQUEST:
```

FIGURE 2

EXAMPLE OF WSMM

ⓐ *WSMM PROFILE*	ⓑ (ACTUAL)	ⓒ EFF DATE: 781223		ⓓ ORG: A10 /TAC/MY/		
ⓔ MONTH	7812	7901	7902	7903	7904	7905
ⓕ COMPOSITE:	(104)	(104)	(104)	(104)	(104)	(104)
ⓖ *ASSIGNED	118	113	125	128	125	125
ⓗ *GAINS	0	1	14	4	0	2
ⓘ *LOSSES	1	6	2	1	3	2
ⓙ *ASSGN 04/05	14/ 5	15/ 5	15/ 5	16/ 5	16/ 5	16/ 5
ⓚ *NET MANNING	+ 14	+ 9	+ 21	+ 24	+ 21	+ 21
ⓛ STAFF & SUPERVISORY	(26/ 2)	(26/ 2)	(26/ 2)	(26/ 2)	(26/ 2)	(26/ 2)
*ASSIGNED/3	(17/ 1)	(17/ 1)	(17/ 1)	(18/ 1)	(17/ 1)	(17/ 1)
*GAINS /3	(0/ 0)	(0/ 0)	(0/ 0)	(1/ 0)	(0/ 0)	(0/ 0)
*LOSSES /3	(0/ 0)	(0/ 0)	(0/ 0)	(0/ 0)	(1/ 0)	(0/ 0)
ⓜ FLYING FORCE	(76)	(76)	(76)	(76)	(76)	(76)
*ASSIGNED	100	95	107	109	107	107
*GAINS	0	1	14	3	0	2
*LOSSES	1	6	2	1	2	2
*ASSGN (UFT)	18	13	13	12	11	11
*REQ E/I	29/ 47	29/ 47	29/ 47	29/ 47	29/ 47	29/ 47
*ASSGN E/I	47/ 53	45/ 50	47/ 60	46/ 63	46/ 61	47/ 60
*GAINS E/I	0/ 0	1/ 0	1/ 13	0/ 3	0/ 0	0/ 2
*LOSSES E/I	1/ 0	3/ 3	0/ 2	1/ 0	0/ 2	0/ 2
*EXPER. INDEX	50.00	47.37	50.00	50.00	48.68	50.00

CHAPTER 4

THE PERSONNEL MANAGEMENT MODEL

This thesis proposes the Personnel Management Model (PMM) as an improvement over current models. PMM is intended to produce a computerized manning report. It would be an on-line product similar to AIRS and WSMM available at Cathode Ray Tube and print terminals. The purpose of the model is to present a picture of present and future manning levels, measure past and projected turnover and tour length trends, and assess the impact on combat capability of personnel movement into and out of the unit. It is designed to be used by personnel managers at all echelons to assess the value of management decisions and enhance their effectiveness.

From the combat readiness point of view, the PMM provides an important data element called the Combat Manning Level (CML). The CML serves as a complementary standard to the Unit Detail Listing (UDL - also displayed on the model) by which to measure the impact upon C-Status of personnel management decisions. An example of a CML is the Manpower Force Element List (MFEL), which is a subset of the Unit Type Code (UTC) used in force packaging contingencies. The MFEL is a list specifying the number of people required in each specialty for the unit to conduct combat operations. The MFEL can be thought of as a "combat UDL." Since present

policy and regulations dictate that personnel assignment actions be based on the UDL, the personnel manager cannot know how his assignment decisions affect combat readiness unless he knows how the UDL and MFEL compare to each other. The CML is displayed on the PMM to apprise him of that comparison. Associated with the CML and displayed on the model is the CML-to-UDL ratio; i.e., the quotient, expressed as a percentage, of CML divided by UDL. Ideally, this ratio should never exceed 100 per cent. If it does, it means that the combat requirement is greater than the UDL authorization; the unit may never be manned to its combat manning level. Whether this happens or not is of critical interest to manpower planners, personnel managers, and combat commanders.

Figure 3 contains an example of the Personnel Management Model display. The PMM is intended to be built from the APDS Officer and Airman Master Files, and updated with the same frequency. At the top of the display is the title. Item ⓐ is a group of four alphanumerics designating the officer/airman grade-range; for example, 01-03 signifies all company grade officers; and, E5-E6 signifies all Staff Sergeants and Tech Sergeants. The "as of" date, item ⓑ , is the date when the source file was last updated; the date code is year-month-day (YYMMDD), 12 January 1979 in the example. "Retrieval date", item ⓒ , is the date when the data were actually withdrawn for display; on a CRT display, it would be the current date.

The next 12 items at the top of the display define the population described by the tabulated figures. These items are both input and output. The RM calls up this format on

the CRT (for example), fills in the appropriate information called for, transmits, then receives the definition parameters back in the PMI display. The meaning of each entry is described as follows:

ⓓ MAJCOM - Major Air Command; two alphanumerics; a series of one or more designators defining the MAJCOM(s) and/or Separate Operating Agencies (SOA)(s) about which manning data is desired. An entry might be 0T for Tactical Air Command (TAC), and/or 0Q for Military Airlift Command (MAC), and/or et cetera. . .

ⓔ CBPO - Consolidated Base Personnel Office; two letters; defines the Air Force base or bases within MAJCOM(s)/SOA(s) specified in ⓓ. The entry is a series of one or more CBPO designators; e.g., LE for Langley AFB, and/or RJ for Randolph AFB, et cetera. . .

ⓕ MUG - Manning Unit Group; one alphanumeric; defines the MUG in each CBPO about which manning data is desired; for example, LE0 for 1st Tactical Fighter Wing (TFW) at Langley AFB, and/or HS1 for the 479th Tactical Training Wing (TTW) at Holloman AFB.

ⓖ PAS - Personnel Accounting Symbol (or group thereof) of interest; four alphanumerics. NOTE: PAS is a subset of MUG, which is a subset of CBPO, which is a subset of MAJCOM/SOA. Items ⓓ through ⓖ define the organizational/geographical boundaries of the population of interest. Where the user makes no entries, "All" is understood; e.g., if no entry were made in "PAS," all PAS's in the MUG's specified in the CBPO's specified in the MAJCOM(s)/SOA(s) specified would be the population displayed on the model. Items ⓗ through ⓟ define the credentials and qualifications of those people of interest within the organizational/geographical boundaries specified in items ⓓ through ⓖ . Items ⓓ through ⓖ specify "where"; items ⓗ through ⓟ specify "who."

ⓗ Func Cat - Functional Category; one letter; differentiates between permanent party and those people in transient pipeline status.

ⓘ RPI - Rated Position Identifier; one numeric; pertains only to offers; describes whether an officer performs flying duty and, if so, at what echelon of staff or line.

ⓙ Aero Rtg - Aeronautical Rating; one letter; differentiates among the various types of flying officers; i.e., pilots, navigators, flight surgeons, astronauts, et cetera.

ⓚ D/C/P/S/T AFSC - Duty/Control/Primary/Secondary/Tertiary Air Force Specialty Code; seven alphanumerics; defines the

Air Force Specialty(ies) of interest. All officers have a duty, primary, secondary, and tertiary AFSC. All airmen have a duty, control, primary, and secondary AFSC.

ⓛ SEI - Special Experience Identifier; three alphanumerics; the option of specifying one or more Special Experience Identifiers is provided to assess manning in certain specialized professional areas. SEI is a subset of AFSC. This position could be used alternately to differentiate between experienced and inexperienced aircrew members.

ⓜ DS/DAC - Duty Status/Deployment Availability Code; two numerics; determines how many of those people assigned are also available for duty and deployment.

If no entry is made for items ⓗ through ⓜ , the model will function as though the particular parameter(s) were not applicable. For example, if no SEI is specified, the model will display data collected without regard to SEI.

ⓝ The entry made in "Months" defines the lateral limits of the tabulated data. For example, an entry of "7403-7908" would generate a display covering the time period from March 1974 through August 1979 inclusive. Limitations on CRT screen size and printer paper size may require pagination. In the example, the "Months" entry would be "7807-7907."

ⓟ "GAME" - Provides the capability of specifying arbitrary values for Gains, Losses, UDL, and CML. If no "gamed" values are specified, the model displays data based on the source file.

The tabular display's lines are numbered, and the columns are lettered for ease of model explanation and to facilitate the gaming function. If the number of columns exceeds 26, double letters are used; i.e., the 27th column would be labeled AA, the 28th BB, the 53rd AAA, the 79th AAAA, and so on. For example, if it is desired to game 3 gains and 5 losses in May 1979, the game statements would be "2F = 3" and "3F = 5"; that is, "Let line 2, column F have the value 3," and "Let line 3, column F have the value 5."

Line 1, except for 1A, displays columnar headings by month (YYMM). 1A is labeled "DAS" and is explained below.

1B is the current month; it is the "as of" month from the top of the display.

The model first searches the file and counts the number of people currently assigned IAW the parameters specified at the top of the display. This value is printed in 10A of the display. It then differentiates among these people on the basis of Date of Arrival on Station. The number of DAS's in the current month (7901 in the example) is printed in 2A. The number of DAS's in current-month-minus-one (7812) is printed in 11A; the number of DAS's in current-month-minus-two (7811) is printed in 12A; and so on for each preceding month back to and including the first month entered in "Months" at the top of the display.

The model next searches the file for gains and prints these values in the appropriate blocks in line 2. The value of 2B is the sum of the remaining current month gains plus the 2A value. The example in Figure 3 shows that 7901 has a total of two gains (2B), one of whom has already arrived (2A). For 2C, 2D, and so on, the model prints the number of gains in each respective month, unless some different value is specified via the "game" function, in which case it prints (and operates mathematically upon) the gamed value. Gains are defined as those people on the file with a Report-Not-Later-Than Date (RNLTD), where gaining organization is that specified by "MAJCOM-CBPO-MUG-PAS" at the top of the display.

After determining and printing gains, the model searches the file for losses. A loss is defined as a person having

either a Projected Departure Date (PDD) or a Date of Separation (DOS). If a person has no PDD, but does have an RNLTD where gaining organization is other than specified in "MAJCOM-CBPO-MUG-PAS," the model will compute a PDD by subtracting one month from RNLTD and display accordingly. Airman DOS's will be further evaluated. If individual is an airman and category of enlistment is "1," DOS will be counted as a loss; if category of enlistment is greater than "1," DOS will be counted as a loss only if individual is in Record Status 20. As it determines the losses IAW above criteria, the model prints the number of losses in each respective month on line 3 of the display unless a different value is specified via the "game" function. NOTE: The 3B value is the number of remaining losses programmed for the current month as of the current file update; a person who has already departed is not counted anywhere on the model.

The model displays the UDL authorization on line 5. This data is either drawn from the source file or gamed.

Line 6 displays the CML. It, too, may be drawn from the source file or gamed.

From this point on, the model makes no further reference to any source file. All remaining values in the display are derived by operating mathematically upon the values thus far defined.

Line 4 displays the number of people assigned as of end-of-month (EOM). 4B is computed as follows: 10A minus 2A plus 2B minus 3B equals 4B; or, 97 - 1 + 2 - 3 = 95. From this

point on in line 4, the "asgn EOM" value in each respective month is taken by continuing on with addition of gains and subtraction of losses; i.e., 4C is 4B plus 2C minus 3C, or 95 + 3 - 2 = 96... et cetera...

Line 7 displays the CML-to-UDL ratio expressed as a percentage. It is computed in each month by dividing the line 6 value by the line 5 value and multiplying by 100 to obtain a percentage.

Lines 8 and 9 are addressed below.

Line 10, except for 10A (explained earlier) displays the "Worst Case" (WC) manning level in each month. The values assume that gains occur on the last day of the month and losses occur on the first day of the month. The figures display the lowest manning level projected for the entire month. It is computed for each month by subtracting the line 2 value from the line 4 value. A "Best Case" manning level for each month can also be determined from the model. The "Best Case" is where gains occur on the first day of the month and losses occur on the last day of the month. The value is computed for a given month by adding the line 3 value to the line 4 value. For example, in Figure 3, the "Best Case" for 7904 is: 4E + 3E = 100. No "Best Case" manning line is provided on the model as the concept has little practical utility.

Line 8 (actually 8B and subsequent) displays the average turnover rate on a month-by-month basis. 8B is computed by taking the arithmetic average of the sum of 16A, 15A, 14A, 13A, 12A, and 11A. 8C and subsequent are computed in similar fashion.

Line 9 (9B and beyond) displays the tour length trend. The value in each month is computed by dividing the line 10 value by the line 8 value.

Lines 11 through 16 contain a time-on-station analysis.

Line 11 (except 11A - explained above) displays in each month the number of people with more than one month time-on-station. The line 11 values are subsets of the corresponding line 10 values. The value in each month is computed by subtracting from the line 10 value the gains in the preceding month. For example, 11B is the remainder of 10B minus 11A; 11C is the remainder of 10C minus 2B; et cetera...

Lines 12 through 16 are computed similar to line 11. For line 12, the number of people with two months TOS is determined by subtracting from the line 10 value the gains of the preceding two months; and so on for three months TOS, four months TOS, et cetera...

A very informative picture of the manning situation can be portrayed by plotting a line graph of selected elements from the tabulated data (see Fig 4).

Plotting the UDL, the data in line 5, displays a manning standard. The personnel manager's objective is to see that enough people in the proper specialty are assigned to the unit to fill the UDL authorization. Whether or not this is in fact the case can be readily determined by plotting line 10 on the graph and comparing it to line 5. The data in line 10 is plotted instead of line 4 so the personnel manager can see the "Worst Case" situation. In the example, Figure 4

portrays a manning deficit in the current month, projects a "Worst Case" 100 per cent in April and May, and shows a personnel deficit in June and July of 1979 as the authorization increases.

Comparing lines 5 and 10 on the graph indicates how well the unit is manned vis-a-vis the UDL. Plotting line 6 (CML) from the table and comparing it to line 10 will show the unit's combat readiness for this particular group of people. In the example, there is a combat manning deficit in the current month; improvement is projected to occur in March, then the unit manning strength stays above the CML through July. Remember that line 10 shows the "Worst Case" manning level. It is particularly important to note the relative positions of line 5, the UDL, and line 6, the CML. In the example, the UDL exceeds the CML in every month. This means that the unit can sustain the combat manning level with less than full UDL manning. In some Air Force units, for some specialties there exists a CML-to-UDL inversion; 100 per cent UDL manning is not enough to sustain the required combat manning level. The PMM line graph makes this situation readily interpretable, with a clear picture of the disparity.

The current month CML value is projected backward to the vertical axis of the graph for comparison later on with the stability line.

Perhaps the most informative set of data is the turnover analysis. Turnover impacts upon unit stability; it drives the training load, which in turn heavily influences resource

utilization decisions and the unit's state of combat readiness. It is incumbent upon the personnel manager to attune the personnel turnover to the needs and training capacity of the operating unit. Experience has shown that meticulous orchestration of the assignments process by Air Staff and MAJCOM people managers is frequently required to insure that combat readiness is maintained, and that the local unit's training capacity is not overloaded because of turnover. For this reason, the Personnel Management Model contains an extensive time-on-station analysis. In the example (Fig 3), lines 11 through 16 contain 42 TOS entries, quantifying the number of people with 1 to 6 months TOS for each of the seven months displayed. A greater or lesser TOS analysis can be called for on the model by adjusting the YYMM entry in "Months" at the top of the display.

Two sets of the chronologically ordered data can be plotted on the PMM Line Graph to present a clear and readily understandable picture of the turnover. The first set of data will be one of lines 11 through 16. The line selected for plotting should be the one most closely approximating upgrade training time required (measured from DAS) for people assigned in the specialty and unit under consideration. For example, suppose training time required is four months; plotting line 14 on the graph will show, in each month, the number of people onboard with more than four months TOS. The unit should have this many people assigned, in each month, who have completed upgrade training and are fully qualified and ready to perform the unit mission.

On the graph, the total number of people assigned ("Worst Case") is everybody below line 10; the total number of people qualified (and this also is "Worst Case") is everybody below line 14. The people between line 10 and line 14 are the new people--those who arrived on station during the preceding four months--all presumably undergoing upgrade training. The space between lines 10 and 14 is the turnover. If the two lines are far apart, there are a lot of new people onboard; turnover is high, and there is a heavy training load; combat readiness is very likely decreased. If the two lines are close together, the number of new people onboard are fewer; turnover is low, and the training load should be quite easy to manage; combat readiness is probably high. A comparison of line 14, the number of people combat ready (trained) assigned, to line 6, the combat manning level, adds a second assessment to the measurement of combat readiness. Ideally, line 14 should always be above line 6; if the personnel manager can accomplish this, he can be certain that he has done all he can to insure that the unit has enough trained, combat ready people to meet the unit's wartime mission.

There is a second set of chronologically ordered data on the tabular display, which when plotted on the line graph, provides a second measure of turnover complementary to the TOS plot. The data, plotted from left to right on the graph, are tabulated figures from (in order) 16B, 15B, 14B, 13B, 12B, 11B, 10B, 11C, 12D, 13E, 14F, 15G, and 16H. On the graph, this plot is called the "stability line." The rate of change of the slope of the line indicates the turnover and pictures

the stability (or lack thereof) for that specialty in that unit. The line always rises from the vertical axis to the current month, indicating the acquisition or gain rate; it always falls from current month to the right, indicating the loss rate. All the numbers plotted in the stability line are subsets of the tabulated figure in 10B; i.e., the people represented by the various plots in the stability line are people who are physically onboard throughout the current month. The steeper the rise and fall of the stability line, the higher is turnover (and stability is lower) and the lower is readiness; and, the converse is also true.

Comparing the stability line to the CML, the earlier the stability line goes above the CML, and the longer it stays above the CML, the higher is combat readiness, and the converse. An interesting sidelight and a crosscheck of mathematical accuracy as well as chartsmanship is to note where the stability line and the TOS line (line 14 in the example) cross. They will cross (have identical values) precisely in that month subsequent to the current month equal to the TOS designator; in the example, they cross in 7905, four months after the current month. Note that the TOS line plotted is line 14, the four months TOS line.

The most important feature of the Personnel Management Model and Line Graph is the capability to predict combat readiness. The personnel manager can study the table and graph, assess the current prediction, then rearrange the manning flow as necessary via the gaming function. When he

strikes the best combination of manning choices, he can then finalize assignment actions to make his new prediction come true.

FIGURE 3

PERSONNEL MANAGEMENT MODEL

ⓐ GRADE: XX-XX. ⓑ AS OF: 790112. ⓒ RETRIEVAL DATE: 790113.

ⓓ MAJCOM: XX. ⓔ CBPO: XX. ⓕ MUG: X. ⓖ PAS: XXXX. ⓗ FUNC CAT: X.

ⓘ RPI: X. ⓙ AERO RTG: X. ⓚ D/C/P/S/T AFSC: XXXXXXX. ⓛ SEI: XXX.

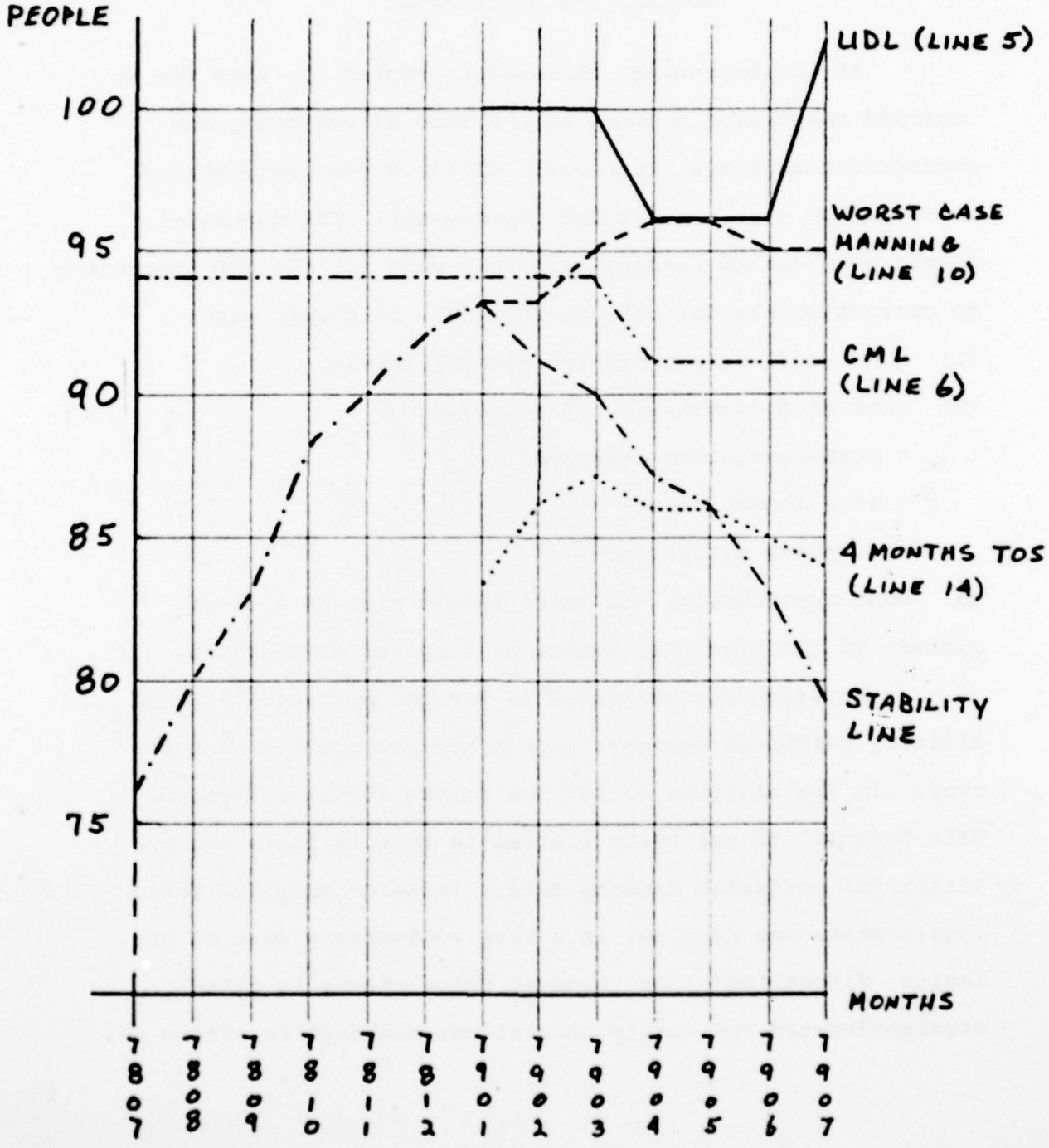
ⓜ DS/DAC: XX. ⓝ MONTHS:XXXX-XXXX. ⓞ GAME: (Clear Text).

		A	B	C	D	E	F	G	H
1.		DAS	7901	7902	7903	7904	7905	7906	7907
2.	GAINS	1	2	3	4	1	2	4	3
3.	LOSSES		3	2	1	3	1	3	4
4.	ASGN EOM		95	96	99	97	98	99	98
5.	UDL		100	100	100	96	96	96	102
6.	CML		94	94	94	91	91	91	91
7.	CML/UDL%		94	94	94	95	95	95	89
8.	TURNOVER RATE		2.83	2.71	2.75	2.89	2.70	2.64	2.75
9.	TOUR LENGTH TREND		33	34	35	33	36	36	35
0.	WC MNG LEVEL	97	93	93	95	96	96	95	95
1.	1 MONTH TOS (7812)	1	92	91	92	92	95	93	91
2.	2 MONTHS TOS (7811)	2	90	90	90	89	91	92	89
3.	3 MONTHS TOS (7810)	2	88	88	89	87	88	88	88
4.	4 MONTHS TOS (7809)	5	83	86	87	86	86	85	84
5.	5 MONTHS TOS (7808)	3	80	01	85	84	85	83	81
6.	6 MONTHS TOS (7807)	4	76	78	80	82	83	82	79

FIGURE 4

PERSONNEL MANAGEMENT MODEL

LINE GRAPH



CHAPTER 5

SUMMARY AND CONCLUSIONS

At the beginning, this thesis stated the need for an improved computerized model as a method of assessing and controlling personnel turnover. Criteria were articulated to establish what constituted improvement. The new model should continue to display gain/loss data and the EOM accounting, as current models do; but, in addition, it should also:

(1) show worst case projected manning levels;

(2) show data descriptive of turnover

- time-on-station analyses
- tour length trends
- turnover rates; and

(3) most importantly, the model should present a clear picture of the predicted impact of turnover on C-Status.

Research was performed to see how both civilian and military personnel managers approached the problem of turnover. In the civilian world, the sample format offered by Dale Yoder(2) is seriously limited in that it lacks any provision for projected manning data. It meets only the basic requirement; and even so, in a very rudimentary sort of way. Jucius' discussion(3) of turnover calculations is quite straightforward and easily understood, although he offers no

conclusions on what these calculations might signify. It is unfortunate that he addressed neither computerization nor manning projections. In the civilian sources, much discussion was found on turnover considerations. Many of these considerations apply also to the military problem. One common factor is basic human nature as reflected in morale, mobility, stability, and the like. The financial considerations are similar as well. The lack of discussion and emphasis in the civilian sources on the use of mathematical models and manning projections left the impression that turnover and its consequences are less of a problem in civilian enterprise than they are in the military.

In researching military sources, it was found that extensive work with predictive personnel models had been going on for more than a decade. While the 1971 Rand Corporation model(6) might be able to describe geographic mobility, it is doubtful that it could be adapted to the problem addressed in this thesis because of the changes in the Air Force personnel MIS over the past ten years. While the Army FORSTAT reporting procedures in regard to personnel do not constitute a model (nor does it meet the improvement criteria laid out above), it does attempt to quantify the current impact of turnover on combat readiness. The Navy appears to have succeeded in developing a computerized model to resolve its sea/shore tour length policy formulation for enlisted people; however, no mention is made of the applicability of the model to commissioned and warrant officers, nor to other geographic

mobility problems. Nor are there any predictive data providing combat readiness impacts.

The Air Force's use of computerized models such as AIRS and WSMM(11) represents movement toward better turnover control; however, these do not meet the improvement criteria specified above.

The AIRS (Figure 1) end-of-month accounting presents a fictitious picture. The unit will almost certainly never have that exact number of people onboard. The number is intended to be true only on the last day of the month, making AIRS an inexact document for a realistic, practical assessment of the number of people assigned to the unit. Note further that EOM figures are given only for the current month, the seventh month, and the 10th month. Experience has shown that most manning problems are dealt with between two and six months ahead. AIRS shows only rough aggregate gain/loss data for that critical time period. AIRS provides no worst-case manning data, no time-on-station analysis, no tour length trend information, no turnover rate, and no indication of the impact of turnover on combat capability.

WSMM has greatly enhanced aircrew management over the latter half of the 1970's. As a result of crew management concepts developed by HQ/Tactical Air Command/Deputy Chief of Staff, Personnel, work was begun in 1978 to expand WSMM to include crew readiness data as an addendum to the management model. The WSMM model and concept could be further improved by adapting it to the management of non-aircrew officers, and

by including time-on-station analyses, tour length trends, and turnover rates.

The Resource Manager's most critical responsibility is the management of personnel combat capability. His most important tools are the APDS manning products. While current models represent significant progress, further improvement is imperative.

The survivability and success of an enterprise depends in large measure upon how accurately the entrepreneur predicts the future. The Personnel Management Model will help the Air Force personnel manager do a far better job than heretofore of predicting the effects of his management decisions. It quantifies turnover in meaningful terms, greatly enhancing the RM's ability to control it. The PMM clears the way for establishing meaningful standards which define realistically achievable limits of turnover. The PMM is recommended to any organization with a personnel turnover problem.

The most important feature of the Personnel Management Model and Line Graph is the capability to predict combat readiness. It is especially recommended for use by the military services.

LIST OF REFERENCES

LIST OF REFERENCES

1. Wagner, Frank V. "Is Decentralization Inevitable?" Datamation, November 1976, p.86.

2. Yoder, Dale. Personnel Management and Industrial Relations. Englewood Cliffs: Prentice-Hall, Inc. 1956.

3. Jucius, Michael J. Personnel Management. Homewood, IL: Richard D. Irwin, Inc. 1975.

4. Flippo, Edwin B. Principles of Personnel Management. New York: McGraw-Hill, 1971.

5. Yoder, Dale. Manpower Economics and Labor Problems. New York: McGraw-Hill, 1950.

6. Merck, J.W. and Hall, Kathleen. A Markovian Flow Model: The Analysis of Movement in Large-Scale (Military) Personnel Systems. Santa Monica: Rand Corp. (1971).

7. Borgen, N.I., and Thorpe, R.P. A Computerized Model of the Sea/Shore Rotation System for Navy Enlisted Personnel. San Diego: Naval Personnel and Training Research Laboratory. (1970).

8. Butterworth, Richard W. A Simple Policy Planning Model for Determining Sea and Shore Tour Lengths. San Diego: Navy Personnel Research and Development Center. (1973).

9. Borgen, N.I.; Segal, J.A.; Thorpe, R.P. Enlisted Rotation Management: Users Guide to the Computerized Equilibrium Flow Model. San Diego: Navy Personnel Research and Development Center. (1973).

10. U.S. Army. Unit Status Reporting (AR220-1). Washington: Headquarters, Dept of the Army. (1978).

11. U.S. Air Force. Advanced Personnel Data System. Randolph AFB, TX: Headquarters, Air Force Manpower and Personnel Center. (1978).